program, and will be stored in RAM. Such data includes all programmed entries, the time and date for each collected sample, data relating to any failed attempts to collect liquid samples, volume collected, volume remaining, bottle number, and time remaining until the next sample.

The fluid flow-related parameters to be input by the user via keypad **17** and stored in RAM include: the type and size of the flow restricting device being used, calibration data for the submerged pressure transducer/sensor **20**, the desired flow rate units, the desired interval for sample collection, and the desired interval for recording flow data. The flow-related parameters are set out in the columns marked "Specify Flowmeter Operation" and "Calibrate Submerged Pressure Transducer" in the User Command section of FIG. **4A**.

Flow rate data will be stored in RAM in accordance with the parameters thus set by the user. As shown in the lowermost box of FIG. **4B**, the flow rate data is to be stored may include the time, date and value for flow rate at a user-selected interval; a daily value for minimum, maximum and average flow rate; daily cumulative flow; overall average flow rate and cumulative flow; local flow minimums and maximums, etc.

As also depicted in the User Command section of FIGS. **4A–4B**, the user can request (via keypad **17**) that the sampler program and flow rate data stored in RAM be displayed on display **18** when desired. As noted above, the data storage memory of the invention comprises battery backed-up RAM, so that stored data will remain available for retrieval by the user until a "start" button is pressed to begin a new sampling cycle.

The invention provides an alternative means for retrieving stored sampler program and flow rate data in the form of a portable data transfer unit, indicated in the lowermost box of FIG. 3. The portable data transfer unit is preferably very compact, i.e., pocket-sized, so that the user can conveniently carry same for selective use. The data transfer unit is provided with its own microprocessor, the memory of which may take the form of CMOS RAM chips powered by a lithium battery (battery backed-up RAM). The unit is also preferably provided with a user-input keypad and an alphanumeric display, and would resemble a conventional small pocket calculator in overall appearance.

The data transfer unit is connected via a conventional connector cable (not shown) with one of the connectors **16**, which may comprise a conventional 6-pin computer connector jack but which provides for a watertight connection. The user may then send an electronic data request command from the data transfer unit to the microprocessor of the sampling and flow measuring apparatus, as indicated diagrammatically in the upper left portion of FIG. **4A**. Upon receipt of such command, the microprocessor of the overall apparatus retrieves the requested data from its RAM and sends it for storage in the memory of the data transfer unit, via the connector **16**.

When it is desired to retrieve the data thus stored in the data transfer unit, the unit is in turn connected, via a computer or printer jack for example, to an external output device (FIG. 3). It is to be understood that the external output device depicted diagrammatically in FIG. **3** may take the form of a conventional printer or computer (e.g., personal computer). The stored data can be read out directly on a line printer to produce a hard copy thereof, with the microprocessor of the data transfer unit itself operating the printer in a known manner. The user is thus able to obtain a complete and accurate hard copy record of the data. Alternatively, the stored data can be transferred to a conventional computer for manipulation using an available software program for statistical analyses, spreadsheeting, etc.; for more permanent storage in a database stored in the computer's memory; and/or for printing by a printer connected to the computer.

It is to be understood that the novel data storage and transfer means in accordance with the invention is not restricted to use with the fluid sampling and flow measuring apparatus of the invention, and can be readily adapted for use with either a sampler or a flow meter functioning as independent units. Further, when used in conjunction with the fluid sampling and flow measuring apparatus of the invention, the data transfer means can be used to selectively transfer sampling data only, flow rate data only, or both types of data, as desired.

The data transfer means according to the invention can also be used in conjunction with a stationary refrigerated sampling and flow measuring apparatus, such as might be installed in a waste treatment plant. In this connection, it is to be understood that the fluid sampling and flow measuring apparatus according to the invention can be adapted to such an installation by adding electric refrigeration means thereto.

Although it may not often be practical, the external connector **16** described above can alternatively be directly linked to a remote computer for direct transfer of the stored data if and when the apparatus itself is transported into close proximity with a computer. However, use of the portable data transfer unit offers a more convenient means for transferring the data.

Turning now to the second embodiment of the invention shown in FIGS. **5** and **6**, here the sensing means comprises an ultrasonic echo range sensor **30** rather than the pressure transducer sensor **20** of the first embodiment. With the exception of the fluid measuring assembly, including the interface electronics and the sensor, the apparatus of the second embodiment remains substantially the same as that of the first embodiment.

In FIG. **5**, the apparatus is shown in a mounted position within a sewer manhole. A suspending means **28** includes a cross-bar support extending across the upper end of the manhole and a plurality of lines extending from the support to fastening portions provided on the case of the apparatus. If desired, such fastening portions may comprise portions of fasteners **4** used to fasten cover **3** to lower case portion **1**.

In this embodiment, the ultrasonic sensor **30** is mounted in position above the fluid in the flow restricting device **22**. Any suitable mounting means may be used for mounting sensor **30**, provided that the sensor **30** is held in position above the fluid and out of contact therewith. The ultrasonic sensor **30** uses an echo range measurement through air technique to measure the distance from a fixed point above the channel to the fluid surface. The output from sensor **30** based on such measurement can then be used by programming provided in the microprocessor to calculate the depth of the fluid in the channel and the rate of flow.

As shown to the right of the dashed line in FIG. **6**, the flow measuring assembly in the second embodiment comprises interface means in the form of ultrasonic sensor interface electronics for sensor **30**. As in the first embodiment, the interface electronics for sensor **30** can be provided on a single board which is integrally connected with the microprocessor. Here the interface